

CLAIMS

1-23. (Cancelled)

24. (Previously Presented) A method for driving a liquid crystal display including a top substrate common electrode a plurality of gate lines, a plurality of data lines, a plurality of common electrode lines arranged alternately between the plurality of gate lines, a plurality of pixels connected to the plurality of gate lines and the plurality of data lines and arranged in a matrix, said method comprising:

- applying a first data voltage of a first polarity to the plurality of data lines;

- providing a first scanning signal for odd pixels in an odd row and even pixels in an even row;

- applying a second data voltage of a second polarity opposite to the first polarity to the plurality of data lines;

- providing a second scanning signal for odd pixels in an even row and even pixels in an odd row;

- supplying the common electrode lines with a swinging common electrode voltage; and

- supplying an overshoot voltage to a voltage applied to each pixel in response to the first data voltage and the second data voltage upon a variation of a level of the swinging common electrode voltage, wherein a level of the voltage applied to each pixel is varied in response to the overshoot voltage.

25. (Cancelled)

26. (Previously Presented) A method for driving a liquid crystal display including a plurality of gate lines, a plurality of data lines, a plurality of common electrode lines arranged alternately between the plurality of gate lines, a plurality of pixels connected to the plurality of gate lines and the plurality of data lines and arranged in a matrix, said method comprising:

applying a first data voltage of a first polarity to the plurality of data lines;

providing a first scanning signal for odd pixels in an odd row and even pixels in an even row;

applying a second data voltage of a second polarity opposite to the first polarity to the plurality of data lines;

providing a second scanning signal for odd pixels in an even row and even pixels in an odd row; and

supplying the common electrode lines with a swinging common electrode voltage;

wherein a swing amplitude of the swinging common electrode voltage is established as:

$$\Delta V_{com} = \frac{2(V_{max} + V_{th})(C_{st} + C_{lc-black})(C_{st} + C_{lc-white})}{C_{st}(2C_{st} + C_{lc-black} + C_{lc-white})}$$

where V_{max} represents the maximum value of the actual voltage sensed by a liquid crystal, V_{th} represents the minimum value of the actual voltage sensed by the liquid crystal, C_{lc} represents a liquid crystal capacitance, C_{st} represents a storage capacitance, $C_{lc-black}$ represents the liquid crystal capacitance in a black mode, and $C_{lc-white}$ represents the liquid crystal capacitance in a white mode.

27. (Previously Presented) The method for driving the liquid crystal display of claim 24, wherein the swinging common electrode voltage has a square waveform having a same period as the first scanning signal and the second scanning signal.

28. (Previously Presented) The method for driving the liquid crystal display of claim 24, wherein the swinging common electrode voltage has a square waveform having a three times longer period than the first scanning signal and the second scanning signal.

29. (Previously Amended) A method for driving a liquid crystal display including a top substrate common electrode, a plurality of gate lines, a plurality of data lines, a plurality of common electrode lines arranged alternately between the plurality of gate lines, a plurality of first pixels and a plurality of second pixels connected to the plurality of gate lines and the plurality of data lines and arranged alternately in rows and columns, said method comprising:

- applying a first data voltage of a first polarity to the plurality of data lines;

- providing a first scanning signal for odd pixels in an odd row and even pixels in an even row;

- applying a second data voltage of a second polarity opposite to the first polarity to the plurality of data lines;

- providing a second scanning signal for odd pixels in an even row and even pixels in an odd row;

- supplying the common electrode lines with a swinging common electrode voltage; and

- supplying an overshoot voltage to a voltage applied to each pixel in response to the first data voltage and the second data voltage upon a variation of a level of the swinging common electrode voltage, wherein a level of the voltage applied to each pixel is varied in response to the overshoot voltage.

30. (Cancelled)

31. (Previously Presented) A method for driving a liquid crystal display including a plurality of gate lines, a plurality of data lines, a plurality of common electrode lines arranged alternately between the plurality of gate lines, a plurality of first pixels and a plurality of second pixels connected to the plurality of gate lines and the plurality of data lines and arranged alternately in rows and columns, said method comprising:

applying a first data voltage of a first polarity to the plurality of data lines;

providing a first scanning signal to the plurality of first pixels in pairs of neighboring rows;

applying a second data voltage of a second polarity opposite to the first polarity to the plurality of data lines;

providing a second scanning signal to the plurality of second pixels in pairs of neighboring rows; and

supplying the common electrode lines with a swinging common electrode voltage;

a swing amplitude of the swinging common electrode voltage is established as:

$$\Delta V_{com} = \frac{2(V_{max} + V_{th})(C_{st} + C_{lc-black})(C_{st} + C_{lc-white})}{C_{st}(2C_{st} + C_{lc-black} + C_{lc-white})}$$

where V_{max} represents the maximum value of the actual voltage sensed by a liquid crystal, V_{th} represents the minimum value of the actual voltage sensed by the liquid crystal, C_{lc} represents a liquid crystal capacitance, C_{st} represents a storage capacitance, $C_{lc-black}$ represents the liquid crystal capacitance in a black mode, and $C_{lc-white}$ represents the liquid crystal capacitance in a white mode.

32. (Previously Presented) The method of claim 29, wherein the swinging common electrode voltage has a square waveform having a same period as the first scanning signal and the second scanning signal.

33. (Previously Presented) The method of claim 29, wherein the swinging common electrode voltage has a square waveform having a period three times longer than the first scanning signal and the second scanning signal.

34. (Previously Presented) The method for driving the liquid crystal display of claim 24, wherein the overshoot voltage is determined as:

$$V_{overshoot} = \frac{\Delta V_{com} \cdot C_{st}(C_{lc2} - C_{lc1})}{2(C_{st} + C_{lc1}) \cdot (C_{st} + C_{lc2})}$$

where V_{com} represents the swinging common electrode voltage, C_{lc1} and C_{lc2} capacitances of a liquid crystal capacitor at the first grey state and the second grey state, respectively, C_{st} represents a storage capacitance.

35. (Previously Presented) The method for driving the liquid crystal display of claim 29, wherein the overshoot voltage is determined as:

$$V_{overshoot} = \frac{\Delta V_{com} \cdot C_{st}(C_{lc2} - C_{lc1})}{2(C_{st} + C_{lc1}) \cdot (C_{st} + C_{lc2})}$$

where V_{com} represents the swinging common electrode voltage, C_{lc1} and C_{lc2} capacitances of a liquid crystal capacitor at the first grey state and the second grey state, respectively, C_{st} represents a storage capacitance.

36-37 (Cancelled)